mistake sick sheep for dead, and healthy sheep for sick. Trot off with your susceptibilities elsewhere, if you please. There's a hatchet in the next room."

VI.

Have I left a single stone unturned to carry my point? demanded the Wolf of himself. Yes, there is a chance for me yet. I have it! And full of hope he came to the cottage of the sixth shepherd.

"Look at me, Shepherd!" he cried. "Am I not a splendid quadruped for my years? What's your opinion of my skin?"

"Very handsome and glossy indeed," said the Shepherd. "You don't seem to have been much worried by the dogs."

"No, Shepherd, no," replied Isegrim, "I have not been much worried by dogs, but I have been and am worried, awfully worried, Shepherd, by hunger. Now, the case being so, as you admire my skin, you and I shall strike a bargain. I am grown old, and cannot live many days longer: feed me then to death, cram me to the gullet, Shepherd, and I'll bequeath you my beautiful skin!"

"Upon my word!" exclaimed the Shepherd. "You come to the person of all on earth most interested in compassing your death, and you demand of him the means to enable you to live. How modest of you! No, no, my good fellow, your skin would cost me in the end seven times its worth. If you really wish to make me a present of it, give it to me now. Here's a knife, and I'll warrant you I'll disembarrass you of it before you can say Trapstick."

But the Wolf had already scampered off.

VII.

"Oh, the bloody-minded wretches!" he exclaimed, "give them fair words or foul, their sole retort to you is still, the hatchet! the cleaver! the tomahawk! Shall I endure this treatment? Never! I'll return on my trail this moment, and be revenged on the whole of the iniquitous generation."

So saying, he furiously dashed back the way he had come, rushed into the shepherds' huts, sprang upon and tore the eyes out of several of their children, and was only finally subdued and killed after a hard struggle, during which he managed to inflict a number of rather ugly wounds upon his captors.

It was then that a venerable shepherd of five score years and ten, the patriarch of the village, spoke to them as follows:—"How much better, my friends, would it have been for us if we had acceded at first to the terms proposed by this reckless destroyer! Whether he was sincere or not, we could have easily established so vigilant a system of discipline with respect to him that he should not have had it in his power to injure us. Now, too late, we may deplore the evil that we cannot remedy. Ah, believe me, my friends, it is an unwise policy to drive the vicious to desperation: the hand of the outcast from society becomes at last armed against all mankind; he ceases after a season to distinguish between friends and enemies. Few, perhaps none, are so bad as to be utterly irreclaimable; and he who discourages the first voluntary efforts of the guilty towards reforming themselves, on the pretence that they are hypocritical, arrogates to himself that discrimination into motives which belongs alone to the Supreme Judge of all hearts, and becomes in a degree responsible for the ruinous consequences that are almost certain to result from his conduct."

M.

TO KATHARINE.

BY J. U. U.

Believe not I forget thee: not for one
Dark moment have I been thus self-divided
From that deep consciousness which is for ever
The light of all my thoughts; it were to lose
My own existence—a chill blank in life:
For all is colourless when love deserts
The heart—sole centre of all joy and woe;
Whose light or gloom all nature wears. Believe
My breast still weary till it turns to thee,
The load-star of its constant faith—unchanged
By distance or by time. For thee it cares:
For thee its joys are treasured up untasted,
As scattered sweets which the home-loving bee
Hoards for its mossy dwelling far away.

THE JERUSALEM ARTICHOKE.

The Jerusalem artichoke affords a plentiful supply of winter food for sheep and cattle, and is highly serviceable in situations where, owing to the unfitness of the soil, or a deficiency of manure, turnips, carrots, mangold wortzel, or potatoes, can be cultivated only to a small extent. Mr Morewood, in the "History of Inebriating Liquors," p. 399, thus treats of the advantages attending its cultivation:—"In some parts of the north of France the root of the Jerusalem artichoke (*Helianthus tuberosus*) has been introduced for the purpose of distillation. The wash from this vegetable is found to yield a very pure strong spirit, which resembles that obtained from the grape more than any substitute that has hitherto been tried. As the root grows readily in Great Britain, and might be cultivated abundantly, it would be well to try the experiment here, as we have no medium spirit between genuine French brandy and the fiery produce of grain sold under the denominations of gin and whisky. In Ireland the cultivation of this plant would be attended with great advantage, since it thrives well in a boggy soil; and in a country like it, where there are so many unreclaimed and waste lands, its culture would be a profitable speculation, for while the roots would afford a fine material for distillation, the tops would yield more fodder than the same space of ground, if sown with ordinary grain."

In Scotland this plant is only to be found in the gardens, the agriculturists of that country being, it would seem, as yet unacquainted with its value as a fodder. According to Mr Tighe, in the "Survey of Kilkenny," p. 342, it has been partially introduced into that county. He says, "The Jerusalem artichoke has been tried as a food for sheep by the Rev. Dr Butler; he found them very fond of the roots, which agreed well with them; the quantity produced in ground without manure was calculated to be at the rate of one hundred barrels per acre (a barrel is five bushels or twenty stones). Being very hardy plants, they will thrive in a poor soil without any manure, and are extremely productive: pigs may be fed with them as well as sheep; and as horses are said to be fond of the tops, it is surprising that their use in agriculture has not been more general. One advantage attends their cultivation—they are not liable to be stolen like turnips, cabbage, young rape, and similar plants; they are not with more difficulty extirpated from ground than potatoes, though this had been objected to them, and will perish soon when the field is laid down with grass."

EARLY STRUGGLES OF MEN OF GENIUS.

ANECDOTE OF ROOKE, THE COMPOSER.

We do not know if it be stated in the Life of Sir Walter Scott that several years previous to his death he had proposed to write a work on the early difficulties to which the most illustrious men of genius in the British islands had been subjected, but it is within our own knowledge that during his visit to Ireland he avowed this intention, and for this purpose collected facts relative to our own most distinguished countrymen, some of which were obtained from ourselves. Such a work, as that great man would have written it, would be of inestimable value; and it is deeply to be lamented that the difficulties in which his own latter years were involved should have prevented him from undertaking it. We have been reminded of this interesting fact by the following anecdote, which has been communicated to us by a friend, illustrative of the early difficulties with which one of our most eminent countrymen had to contend, and from which he succeeded in extricating himself, no less by persevering energy of mind, independence of spirit, and propriety of conduct, than by the possession and cultivation of talents of the highest order—we allude to the author of the opera of "Amilie, or the Love Token." We give the anecdote in our friend's own words:—

"William M. Rooke, the composer of the delightful music of 'Amilie,' an opera which has spread his musical fame far and wide, had in early life to contend for years, in his native city, Dublin, against difficulties which would have broken the spirit of any one, save a man endowed with the strongest mental powers: indeed, many men of great talents have sunk under trials which the genius and perseverance of Rooke have at length overcome, placing him at his present height of celebrity as a British composer. None can so truly estimate his merits as those who are aware of the hard fortune of his early days,

and what he had to struggle against previous to his visiting London in 1821.

In reference to these struggles, the following singular fact may not prove uninteresting to those fond of the marvellous; and had not the circumstance occurred in my presence, I should have doubted its truth:—One morning during the summer of 1818, I called at Rooke's lodgings, and on entering the room found him in a state of great dejection. 'How are you, Billy?' said I (my usual salute). 'As well as a man can be,' he replied, 'who has not yet had his breakfast, and who has not a farthing in his pocket to procure one.' This was at eleven o'clock. At the very moment that this reply was uttered, our eyes were attracted by a light piece of paper, which for a short time floating over our heads, finally settled upon the floor; and our astonishment may be imagined on discovering it to be a bank note! It would not be easy to describe my feelings. I gazed on the object intently, scarcely believing it a reality, although I could plainly see the prominent features of its value—Thirty Shillings! We both remained for some minutes motionless, except that our eyes were cast alternately from the object of our wonder to the various parts of the room, seeking a cause for so unexpected but welcome a visitor. This apparent mystery, however, was soon explained. Some months previous, Rooke had missed a thirty-shilling note, and supposed it to have been stolen from him. On the morning of my call he had been seeking some manuscript music stowed away in a press near the window, the upper sash of which was down; and in his search the long-lost note had thus been exposed to a strong current of air, which ultimately dislodging it from its place of concealment, restored it to its owner at a moment when it was so much wanted.

When last in London, during an evening's chat with my friend, casting our thoughts back upon old times and circumstances, I brought to his recollection the fact here related, the singularity of which principally rests upon the strange chance of the mislaid note re-appearing at such a time and in such a manner; and I question whether, in all its rambles before or since, the said thirty-shilling note ever came to hand so opportunely." B. W.

THE NATURE OF WATER.

We concluded a previous notice of some of the uses to which water is subservient in nature, by mentioning that modern science had fully proved the incorrectness of the ancient idea of the elementary nature of water; and that by the processes which chemistry places at our disposal, we are now able to resolve water into its elements, or, having obtained these elements from other sources, to cause them to unite, and to produce water in combining. In the present article we shall point out the manner in which this may be accomplished, and describe some properties and uses of water which the space at our disposal did not allow us to notice before.

Water consists in great part of the substance to which is due the power the atmosphere possesses of supporting life and combustion, and of which we have formerly spoken under the name of oxygen. Every nine ounces of water contain eight ounces of oxygen, the remainder being made up of another and very peculiar substance, termed hydrogen. Hydrogen is a gas, invisible, colourless, and transparent, and consequently in all external characters precisely like the air we breathe. But it differs from it very much in other respects. If a lighted candle be placed in hydrogen gas, the candle is extinguished, for hydrogen does not support combustion, but the gas itself takes fire, where it mixes with the air, and burns with a pale yellowish flame, scarcely visible in broad day-light. Hence hydrogen is in its properties the very reverse of oxygen: it burns, which oxygen does not; oxygen supports combustion, which hydrogen cannot do. When hydrogen burns with oxygen, water is always formed.

Now, to decompose water it is only necessary to act upon the principle of hydrogen being a combustible substance. All substances are not equally combustible; that is to say, they do not burn or combine with oxygen with equal facility or quickness. Thus charcoal is more combustible than iron, iron is more combustible than copper, and copper than gold or silver, whilst phosphorus is still more combustible than charcoal. Now, oxygen will combine with any of these combustible substances; but if it have a choice, it will take that which is most combustible—that which it likes best. And even if the oxygen be already united with one body, and that another more combustible be brought into action on it, it will leave the former, and attach itself altogether to the latter substance. The combustibility of hydrogen is about equal to that of iron. It is inferior to carbon and to many other bodies; but it is superior to that of copper, silver, gold, and others. If, therefore, we take water in the state of steam, and bring it into contact with red-hot charcoal or coke, the oxygen of the water goes to the most combustible body, and the hydrogen is set free. In this way charcoal may be made to burn brilliantly without air, but not without oxygen. A red-hot bit of charcoal burns in steam, because it decomposes the water; it takes the oxygen, and turns the hydrogen out, which assuming the form of gas, may be collected by means of peculiar chemical apparatus.

Iron and hydrogen are, as mentioned above, about equally combustible: in fact it depends upon the degree of heat, which is the more combustible. If the iron be bright red, it decomposes water, taking away the oxygen; but if it be only dull red, then hydrogen is the more combustible; and if there be a compound of oxygen and iron ready formed (oxide of iron, rust), the hydrogen will decompose it, and water being formed, the iron will be set free. If, therefore, a gun barrel be laid across a fire, and heated to bright redness, and a little water be poured into it at one end by means of a tundish with a stop-cock soldered to it, hydrogen gas will issue from the other end, and may be burned, or collected for various purposes.

Hydrogen gas may be prepared more easily by other processes, which do not show, however, so clearly the fact of its being derived from the decomposition of the water. The property which iron acquires at a bright red heat may be given to it without any heat, by means of some oil of vitriol (called in the language of chemists, sulphuric acid). Iron quite cold will decompose water, if the water be previously mixed with some sulphuric acid. The oxygen goes to the iron, which dissolves, and the liquor contains green copperas. The metal zinc, which is now so very much used in the arts, may also be employed with sulphuric acid and water to decompose water, and it gives a purer hydrogen gas than iron, the latter metal containing always a little charcoal, which mixes with the hydrogen and contaminates it.

In all of these processes, although the water is decomposed, yet we obtain only one of its elements; the other, the oxygen, remaining combined with the iron, the charcoal, or the zinc. We may, however, produce the separation of water into its elements, so as to exhibit both. This is done by passing a current of electricity from the apparatus termed the galvanic battery, through the water. One of the grandest and most fruitful discoveries ever made in chemistry was that by Sir Humphry Davy, who proved that electricity possesses the power of separating compound substances into their elements; and by that means he succeeded in decomposing numerous bodies which had resisted all processes known before that time, and obtained new substances of a simple nature, and of most curious and important properties. To decompose water by means of electricity, the wires from the galvanic battery are made to dip into a little cup of water, and over each wire there is hung a bell-shaped vessel, inverted, full of water. When the current passes, pure oxygen gas is disengaged from one wire, and pure hydrogen gas is liberated at the other, and being received as the bubbles rise in the bell-glasses, the gases are collected for use.

So much for the separation of water into its elements; the production of water by the union of its elements is still easier. The simplest way to show this is to take a little bottle, and put into it the zinc, water, and sulphuric acid, by which the hydrogen is to be obtained, to fit to the mouth of the bottle a cork, through which passes a little glass or metal tube, ending in a fine jet. The gas may be set on fire as it issues from the jet, and by holding a cold plate or a tumbler over the flame, and at a little distance, a copious dew of water will be deposited upon it, which after a few moments will increase so much as to run into large drops. This water is formed by the hydrogen gas combining as it burns with the oxygen of the air.

Hydrogen gas in burning produces very little light: one cause of this is, that the product of combustion-formed water being in a state of steam, there is no solid substance in the flame; and it appears to be always true that no bright light can exist without a solid material. In order to produce a great light with the flame of hydrogen gas, it is only necessary to place a wire or a bit of flint, or any solid substance, in the flame. The solid immediately becomes intensely bright, and